Agenda Item 11

Delta Independent Science Board: Recent Accomplishments and Upcoming Activities

Dr. Stephen Brandt

Chair, Delta Independent Science Board

Delta Stewardship Council Meeting
February 22, 2018

Who We Are

- Standing board appointed by the Delta Stewardship Council
  - Serves both the Council and the Delta science community

- Mandate
  - "… provide oversight of the scientific research, monitoring, and assessment programs that support adaptive management of the Delta through periodic reviews of each of those programs…."

Who We Are

- 85308. “The Delta Plan…Be based on the best available scientific information and the independent science advice provided by the Delta Independent Science Board.”

- Overall Objective:
  - Help improve the science underlying Bay-Delta programs, the application of that science, and the technical aspects of those programs.

Delta Independent Science Board

- **Evaluate the state and adequacy of the science;**
  - ✓ **Recommend strategic science priorities**
  - ✓ **Identify gaps**
  - ✓ **Increase scientific credibility,**
  - ✓ **Improve research clarity,**
  - ✓ **Advance the debate about Delta issues,**
  - ✓ **Seek better connectivity between science, management and policy**

- **Do not make or recommend policy decisions**

Current Membership

Dr. Stephen Brandt
Fish & Food Webs

Dr. Elizabeth Canuel
Biogeochemist

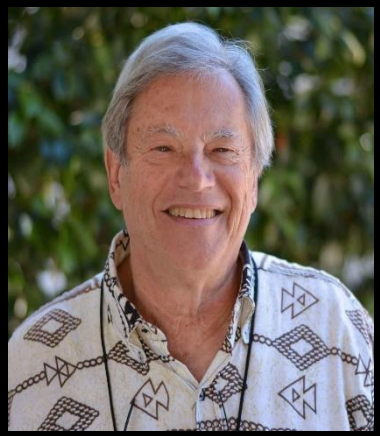
Dr. Tracy Collier
Fisheries/Toxicology

Dr. Joe Fernando
Engineer

Dr. Tom Holzer
Geologist

Dr. Jay Lund
Engineer

Dr. Dick Norgaard
Economist



Dr. Vince Resh
Ecologist

Dr. John Wiens
Landscape Ecologist

Dr. Joy Zedler
Botany & Wetlands

2017 Completed Reviews

1. SWRCB's Draft Phase II Scientific Basis Report
2. Delta as an Evolving Place
3. EcoRestore Adaptive Management White Paper
4. Final EIR/S for California WaterFix
5. Draft 2017-2021 Science Action Agenda
6. Delta Plan CSO Amendments

In 2017, we started creating summary sheets for completed thematic reviews.

Summary Sheets

Using Adaptive Management to Improve Delta Ecosystems

January 2018

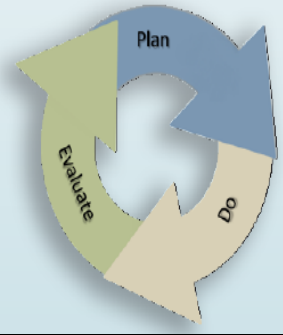
The Delta Independent Science Board recently reviewed how adaptive management is used in the Delta and made recommendations on how it might be used more effectively. The recommendations aim to make adaptive management an integral part of Delta management. Recommendations include:

- Using management and restoration opportunities to test adaptive management and monitoring approaches
- Identifying trigger points for evaluating management practices in initial plans
- Taking advantage of unplanned events to understand ecosystem function and management
- Ensuring dependable and flexible funding to support adaptive management
- Recognizing that adaptive management is not a panacea for all management situations
- Developing the composition and roles of a coordinating team to advance adaptive management in the Delta

Adaptive Management (AM) is an efficient, science-based approach to sustain natural resources. AM is an organized way of using new knowledge, experience, and stakeholder input to manage the Delta under changing and uncertain conditions.

By evaluating alternative actions and using multiple sources of knowledge and data to select the most promising approaches, AM can reduce long-term costs.

AM differs from **traditional ecosystem management**, which generally lacks continual assessment of progress and adjustment of approaches. As the graphics below demonstrate, AM is a continuous process whereas traditional ecosystem management is a directional process.



Incorporating the Unique Values of the Delta as an Evolving Place in Delta Decision-Making

February 2018

In 2017, **the Delta Independent Science Board (ISB)** conducted a review of how the unique values of the Delta as an evolving place are incorporated into decision making for the Delta. The recommendations, which serve to make the coequal goals a fundamental part of Delta management, include:

- Increase social science research into Delta as an evolving place to balance environmental research
- Gain a better understanding of the Delta's cultural, recreational, natural, and agricultural values
- Identify natural processes that protect and enhance values of the Delta as an evolving place
- Develop frameworks to incorporate feedback between human and natural systems
- Use citizen science to identify, monitor, and evaluate unique Delta qualities and explore alternative futures
- Communicate with Delta residents to learn about the Delta's environmental and cultural history
- Use traditional ecological knowledge to enrich our understanding of sustainability and future possibilities

Origin and Management of Delta Values

The values of the Delta arise from the interaction and coevolution of its socio-economic-cultural system and its ecological-environmental system. Managing for the coequal goals (balancing water supply reliability and the protection, restoration, and enhancement of the Delta ecosystem) also affects the interactive processes between the Delta's social and environmental systems. Decisions need to include knowledge from the research of social and environmental systems.

Thematic Reviews

- **Identify Relevant Thematic topics**
  - **Delta Plan Chapter Topics**
  - **Panels, Discussions**
- **Prospectus on topic, goal, methods**
  - **Public review and revisions**
- **Draft Review for public comment (repeat as necessary)**
- **Final Review and report to Council**
- **Summary sheets, presentations at scientific conferences, scientific publications, meetings with agencies**

Thematic Reviews Methods

- **Review of scientific literature**
- **Board discussion and debate**
- **Interviews**
- **Formal questionnaires**
- **Brown bag seminars and panels**
- **Public comments**

July 2017 Planning “Retreat”

- What are the most important and challenging science issues you see in the coming years?

- What are the regional science issues where you would like to see additional focus from the Delta ISB?

- How could the Delta ISB make the reviews more useful? How aggressive should the Delta ISB be in promoting its reports and reviews? What kinds of follow-up actions would be most effective?

Current Thematic Reviews

1. Water Quality Science I: Chemical Contaminants and Nutrients
2. Delta Monitoring Enterprise
3. Interagency Ecology Program (IEP)
4. Water Supply Reliability
5. Ecosystems
6. (Water Quality Science II)

Delta Monitoring Enterprise Review

1. Part I: Inventory of ALL Monitoring Programs
   a) What is being collected?
   b) Who is collecting and funding?
   c) Why is it collected?
   d) How is it used in management?

2. Part II: Delta ISB Review and Recommendations
   a) How can programs be better linked and coordinated?
   a) Are programs meeting the needs of management?

Delta Stewardship Council
Delta Independent Science Board

Delta Independent Science Board (Delta ISB) seeks public comment on its draft prospectus for a comprehensive review of Delta monitoring

TUESDAY 28 FEBRUARY

To read the Draft Monitoring Prospectus, please click here.

The Delta ISB would like to hear your thoughts on its draft planning prospectus to undertake a broad and comprehensive review of monitoring in the Sacramento-San Joaquin Delta.

In the prospectus, the Delta ISB wants to make these recommendations:

- Improve how current and future monitoring programs serve the present and expected informational needs of management agencies
- Better coordinate individual and larger-scale monitoring programs
- Advance how monitoring data can support implementation of adaptive management and assessments of performance measures

The review will encompass inventories of physico-chemical, biological and social science monitoring programs.

To read the Draft Monitoring Prospectus, please click here.

Please send your comments by March 15, 2017 to:
science@deltacouncil.ca.gov

Review of IEP

How can IEP function more effectively in terms of science collaboration, integration and use, to better inform decision making and adaptive management in the Delta?

- Prospectus public comments, revised
- Documents being reviewed
- Brown bag lunch and panel in January
- Questionnaire completed and being distributed
- Plenary talk and request for input at IEP Annual Workshop in March

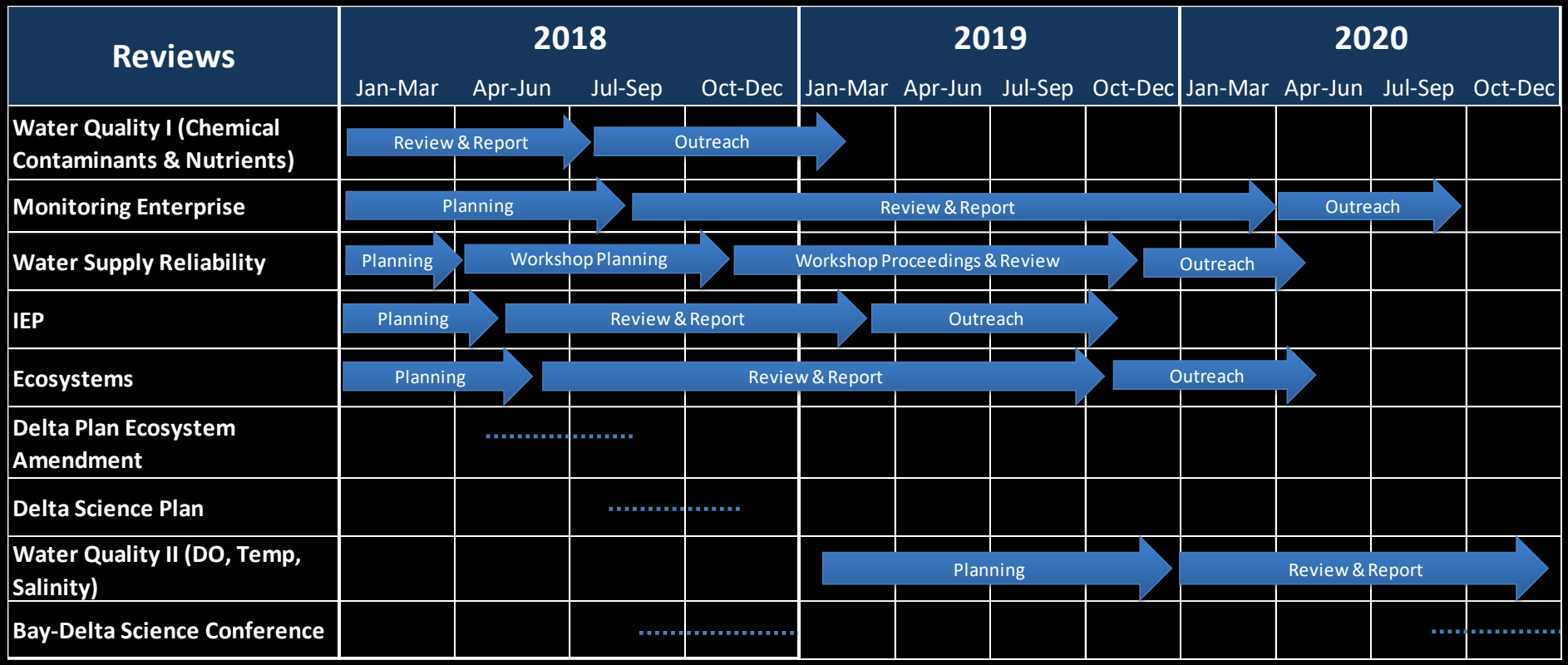
Upcoming Requests

1. Council Requests
   a) Delta Plan Ecosystem Amendment White Papers

2. Delta Science Program Requests
   a) Delta Science Plan
   b) Water Supply Adaptive Management Framework

3. Others from the Delta science community?

Timeline



Updated 1/10/18

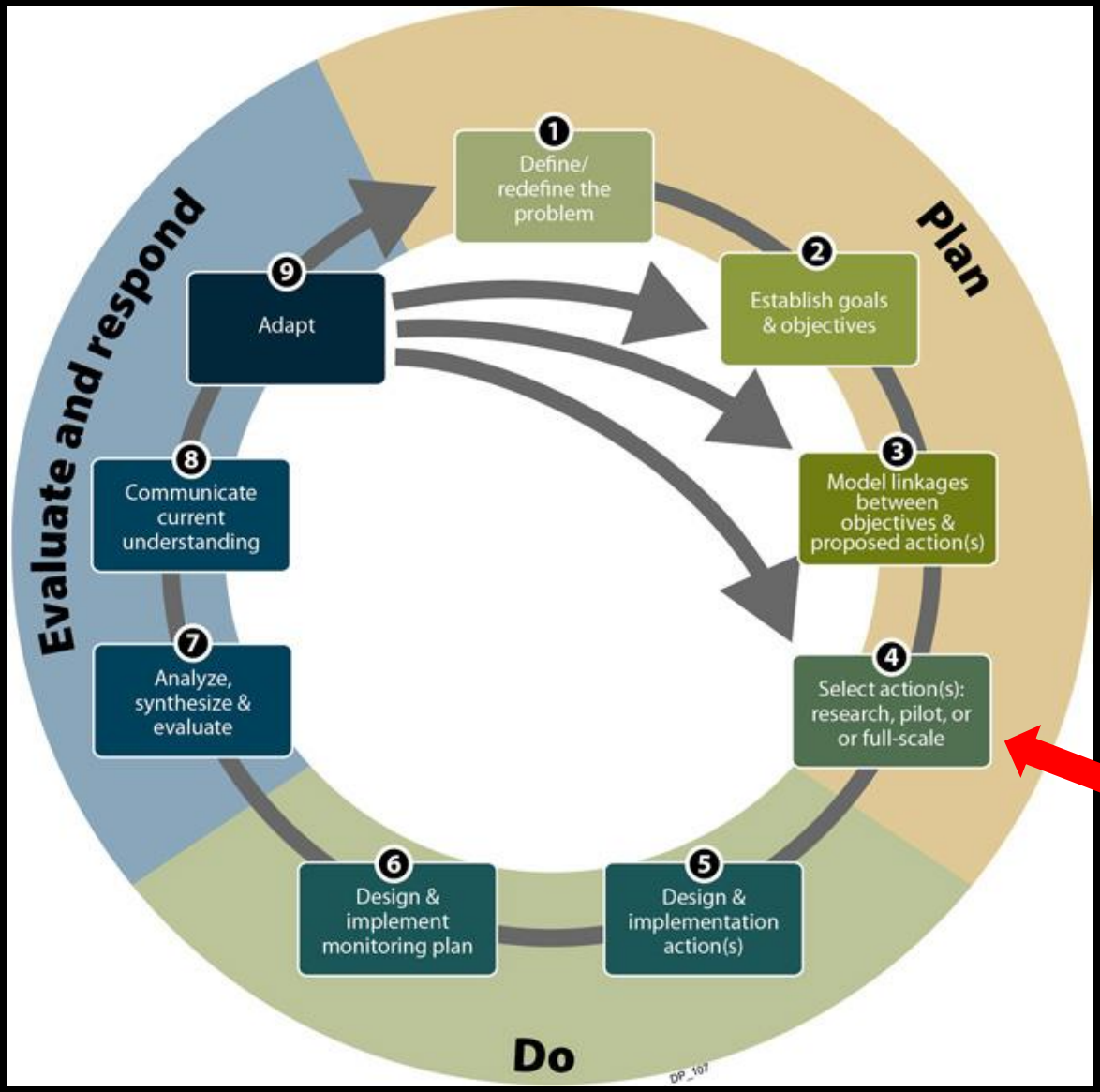
Planned/Estimate Timeline

Very Rough Estimate

Bridging Science to Management

- Adaptive Management Process
- Ecosystem (environmental) Forecasting
- Science-Management Communication
- User tools

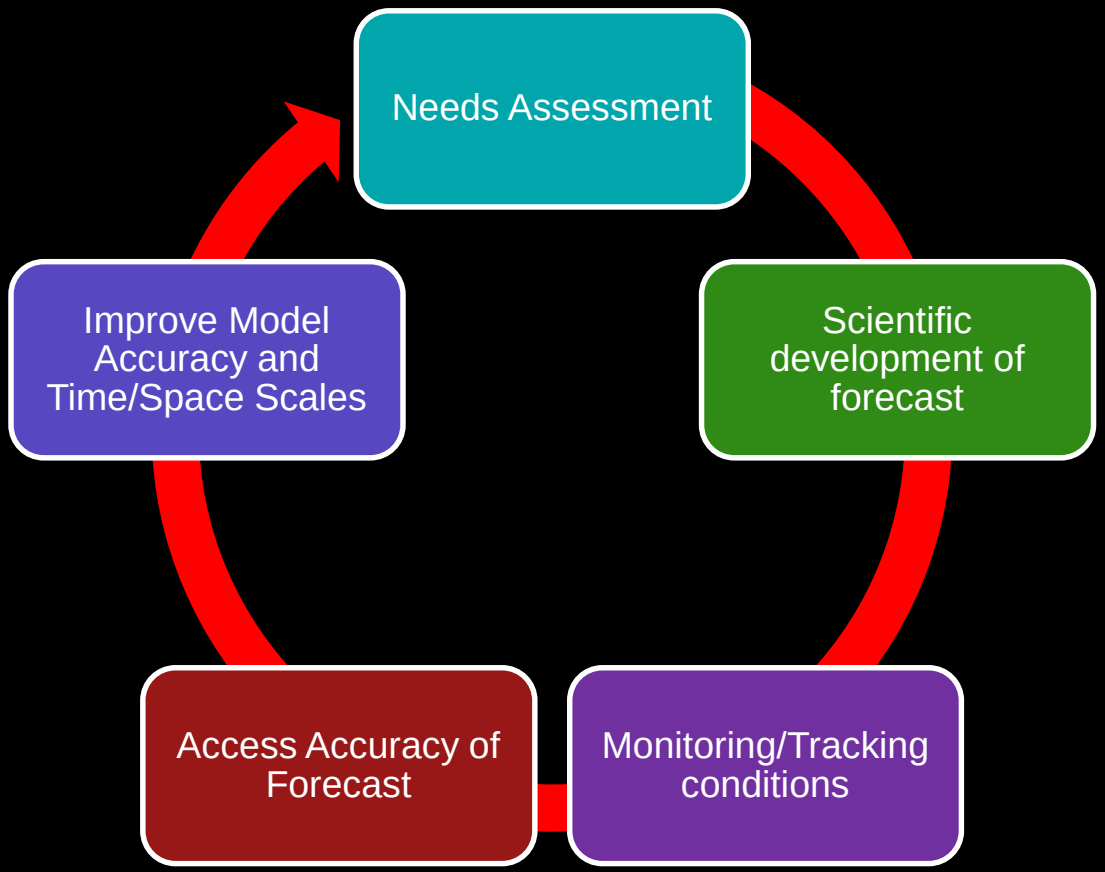
Adaptive Management



- Setting Realistic Goals
- Identifying Thresholds
- Monitoring
- Analysis and Adaptation

From Wiens et al. 2017

Ecosystem Forecasting provides a broad framework for prioritizing science, multi-disciplinary approaches and scientific collaboration



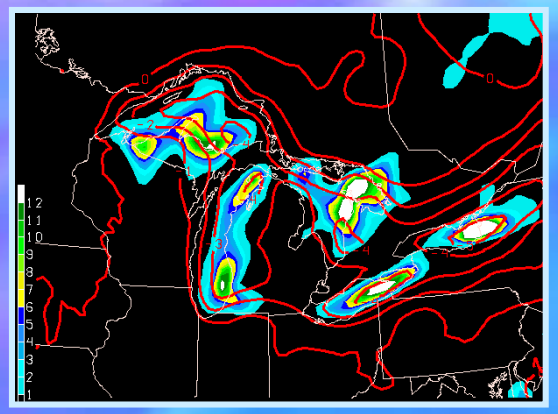

Questions?

BACKUP SLIDES

Ecosystem Forecasting

Ecosystem forecasting predicts the effects of biological, chemical, physical and human-induced changes on ecosystems and their components

- What will happen in the future?
- When will it happen?
- At what spatial scales?



Ecosystem Forecasting

- Aids in
  - Improved decision making
  - Reductions in risks
  - Communicating the value of Science
  - Focusing research on fundamental driving forces and science at disciplinary interfaces
  - Mitigation of natural events and human activities – Adaptive management
  - More effective prioritization of research and monitoring

This will require ;

- Research that is more focused on **Forcing** rather than Impacts
- Research that is focused on **Prediction** rather than explanation
- New breakthroughs in our understanding at the boundaries between disciplines (including physical-chemical-biological-societal interfaces),
- Improved technologies to expand the time, space and parameter scales that we observe the ecosystem
- Changes in training the next generation of scientists